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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/915,985	07/25/2001	Detlef Hommel	1999P8006 US N	8172

7590

06/05/2002

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EXAMINER

IM, JUNGHWA M

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 06/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicant(s)

Applicant(s)

HOMMEL ET AL.

09/915,985

Examiner

Art Unit

2811

Junghwa M. Im

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2002.
- 2a) ☐ This action is FINAL.
- 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1,2, 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,198,690 to Kitagawa et al.

Kitagawa et al. teach, in Fig10, a semiconductor component for generating visible polychromatic light, comprising:

a semiconductor chip having a first semiconductor layer(27) and second semiconductor layer adjacent to said first semiconductor layer (29);

said second semiconductor layer including an electroluminescent region emitting visible light of a first color having a first wavelength (col.12, lines 11-12);

said first semiconductor layer absorbing part of the visible light of the first color and said first semiconductor layer re-emitting visible light of a second color having a second wavelength, the second color being different from the first color, and the second wavelength being longer than the first wavelength (col. 12, lines 10-15); and

said semiconductor chip emitting the visible light of the second color together with the visible light of the first color (col. 12, lines 10-14);

Regarding the first semiconductor layer with a first band gap and electroluminescent region having a second band gap, while the first band gap being smaller than the second band gap, it is alternatively obvious that the first layer with a longer wave length will have a smaller band gap than the second layer with a longer wavelength.

Regarding claim 2, Kitagawa et al. teach the first semiconductor layer and second semiconductor layer are configured such that said semiconductor chip emits white light (col.12, lines 21-23).

Regarding claim 4, Kitagawa et al. teach a substrate for epitaxially growing the second semiconductor layer is also utilized as the first semiconductor layer (col. 12, lines 9-10).

Regarding claim 5, Kitagawa teach a semiconductor chip includes a growth substrate and the first semiconductor layer is disposed between the growth substrate and the second semiconductor layer (col. 12, lines 8-14).

Regarding claim 6, Kitagawa et al. teach a semiconductor chip includes a growth substrate for epitaxially growing the second semiconductor layer and the second semiconductor layer has a side opposite the growth substrate while the first semiconductor layer is disposed on the side of the second semiconductor layer opposite said growth substrate (col. 12, lines 8-16).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitagawa et al. in view of the admitted prior art to Henry et al.

Kitagawa et al. do not explicitly teach that the first layer includes a material with an absorption edge having an energy level corresponding to a third wavelength which is longer than the first wavelength of the visible light emitted by the semiconductor layer and is shorter than the second wavelength; and , re-emitting radiation of the second wavelength when exited with radiation of a wavelength shorter than the third wavelength.

Henry et al., however, show a re-emitting layer (7) in Fig. 5 with a wavelength which is longer than the first layer and shorter than the second layer with the claimed emission state. (col. 4, lines 47-68).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teaching of Henry et al. into the device taught by Kitagawa et al. since such a layer with the material minimizes the possible the migration defects of the light in the substrate.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitagawa et al. in view of U.S. Pat. No.5,488,233 to Ishikawa et al.

Regarding claim 7, Kitagawa et al. teach that the first semiconductor layer includes doped ZnSe (col.1, lines 32-34). However, Kitagawa et al. do not explicitly teach second semiconductor layer has an active zone containing $\text{Cd}_x\text{Zn}_{1-x}\text{Se}/\text{ZnSe}$ with $0 \leq x \leq 1$.

Ishikawa et al. teach that an LED with a $\text{CdZnSe}/\text{ZnSe}$ layer (107) in Fig.5, formed between the light emitting layers.

It would have been obvious to one of ordinary skill in the art at the time of the

invention was made to employ the teaching of Ishikawa et al. to the device taught by Kitagawa et al. since such modification can improve reliability of the device with better light emitting efficiency.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitagawa et al. in view of U.S. Pat. No. 4,784,722 to Liao et al.

Regarding claim 8, Kitagawa et al. do not explicitly teach that semiconductor chip being disposed in a parabolic mirror.

Liao et al. teach that a light emitting diode with a parabolic mirror (32) in Fig. 3.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teaching of Liao into the device taught by Kitagawa et al. since a parabolic mirror on a light emitting device can allow the higher efficiency of the reflectivity favoring the performance of the device.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Junghwa M. Im whose telephone number is (703) 305-3998. The examiner can normally be reached on MON.-FRI. 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

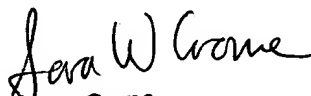
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JMI
May 21, 2002


Sara Crane
Primary Examiner